

APPLICANT(S): NAPADENSKY, Eduardo et al.  
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### AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

The listing of the claims will replace all prior versions, and listing, of claims in the application:

#### Listing of the Claims

1. – 57. (Cancelled)

58. (Currently Amended) A pseudo multi-phase composite material, said pseudo composite material ~~comprising a first phase and a second phase, wherein each phase comprises an organic compound, wherein each phase comprises a multiplicity of construction layers, wherein said layers were deposited by ink-jet printing, wherein said pseudo composite material exhibits non-homogeneous three dimensional structure, wherein being manufactured by:~~

pre-designing a structure of said multi-phase composite material according to desired pre-defined properties of said composite material;

dispensing two or more materials from two or more corresponding dispensers, to form layers corresponding to said structure, each said layer comprising one or more phases of said multi-phase composite material, each said phase comprising one or more of said materials; and

curing or solidifying said two or more materials.

59. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein said a first phase of said multi-phase composite material is structurally different from said a second phase.

60. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein said a first phase of said multi-phase composite material is chemically different from said a second phase.

61. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein said a first phase of said multi-phase composite material exhibits different properties from said a second phase.

62. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein said a first phase of said multi-phase composite material is produced by dispensing ~~a first phase composition~~ one of said materials and said a second phase is produced by dispensing ~~a second phase composition~~ another one of said materials.

63. (Currently Amended) The ~~pseudo~~ composite material according to claim ~~58~~ 62, wherein said ~~first phase composition~~ one or more of said materials, ~~said second phase composition or both~~ comprise a curable component.

64. (Currently Amended) The ~~pseudo~~ composite material according to claim 63, wherein said curable component is electron beam curable, electromagnetic radiation curable, thermo-curable or any combination thereof.

65. (Cancelled)

66. (Currently Amended) The ~~pseudo~~ composite material according to claim ~~58~~ 62, wherein a said first phase of said multi-phase composite material composition, a said second phase of said multi-phase composite material composition or both comprise ~~a first interface material and a second interface material~~ more than one of said materials in a pre-determined proportions, wherein said first phase ~~composition~~ and said second phase ~~composition~~ are not identical.

67. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein at least one of said phases ~~phase~~ is a continuous phase.

68. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein at least one of said phases ~~phase~~ is a non-continuous phase.

69. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein the desired properties of said ~~pseudo~~ composite material are selected from the group consisting of ~~are~~ isotropic properties, ~~un-isotropic~~ anisotropic properties or a combination thereof.

70. (Currently Amended) The ~~pseudo~~ composite material according to claim ~~58~~ 69, wherein said desired properties are mechanical, thermo-mechanical, optical, acoustic, electrical properties or any combination thereof.

71. (Currently Amended) The ~~pseudo~~ composite material according to claim ~~58~~ 69, wherein ~~the~~ mechanical strength of said ~~pseudo~~ composite material along one axis of said composite material is higher than said mechanical strength of said composite material along another axis of said composite material.

72. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein ~~the~~ elasticity of said ~~pseudo~~ composite material along one axis of said composite material is higher than said elasticity of said composite material along another axis of said composite material.

73. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein ~~the~~ refractive index of said ~~pseudo~~ composite material along one axis of said composite material is different than said refractive index of said composite material along another axis of said composite material.

74. (Currently Amended) The ~~pseudo~~ composite material according to claim 58, wherein ~~the~~ refractive index of said composite material along one axis varies.

75. – 79. (Cancelled)

80. (Currently Amended) A method for the preparation of a ~~pseudo~~ a multi-phase composite material ~~having a non-homogeneous three-dimensional structure, said method comprising the steps of:~~

pre-designing a structure of said multi-phase composite material according to desired pre-defined properties of said composite material;

~~dispensing a first phase composition from a first dispenser and to produce a first phase, wherein said first phase comprising an~~

~~organic compound; dispensing a second material phase composition from a second dispenser to produce a second phase, wherein said second phase comprising an organic compound, whereby depositing a multiplicity of construction layers two or more materials from two or more corresponding dispensers to form layers corresponding to said structure, each said layer comprising one or more phases of said multi-phase composite material, each said phase comprising one or more of said materials; and~~

~~curing or solidifying said two or more materials first phase composition and said second material phase composition, thereby producing a pseudo composite material having a non-homogeneous three-dimensional structure.~~

81. (Currently Amended) The method according to claim 80, ~~further comprising the step of producing one or more phases, wherein each phase comprising a multiplicity of construction layers~~ wherein one or more of said materials comprise an organic material.

82. (Currently Amended) The method according to claim 80, wherein at least one ~~construction layer~~ comprises more than one of said materials comprising said first phase composition and said second phase composition.

83. (Currently Amended) The method according to claim 80, wherein said curing or solidifying ~~are~~ is performed immediately after deposition of ~~one construction~~ each of said layers layer.

84. (Currently Amended) The method according to claim 80, wherein said curing or solidifying ~~are~~ is performed after deposition of more than ~~one~~ one ~~of said construction~~ layers.

85. (Currently Amended) The method according to claim 80, wherein said curing or solidifying ~~are~~ is performed during deposition of said ~~construction~~ layers.

86. (Original) The method according to claim 80, wherein said curing or solidifying is performed at a controlled temperature.

87. (Original) The method according to claim 86, wherein said temperature is higher than 25°C.

88. (Currently Amended) The method according to claim 80, wherein ~~said a~~ first phase of said multi-phase composite material is structurally different from ~~said a~~ second phase.

89. (Currently Amended) The method according to claim 80, wherein ~~said a~~ first phase of said multi-phase composite material is chemically different from ~~said a~~ second phase.

90. (Currently Amended) The method according to claim 80, wherein ~~said a~~ first phase of said multi-phase composite material exhibits different properties from ~~said a~~ second phase.

91. (Currently Amended) The method according to claim 80, wherein ~~said first phase composition and said second~~ at least one of said materials comprises phase composition ~~comprising~~ a curable component.

92. (Original) The method according to claim 91, wherein said curable component is electron beam curable, electromagnetic radiation curable, thermo-curable or any combination thereof.

93. (Currently Amended) The method according to claim 80, wherein ~~said first phase composition, said second phase composition or both comprise a first interface material, wherein said first phase composition and said second phase composition are not identical~~ one or more of said desired pre-defined properties change along a gradient, said properties gradually increasing along an axis of said composite material.

94. (Currently Amended) The method according to claim 80, wherein ~~a said first phase of said multi-phase composite material composition, a said second phase of said multi-phase composite material composition or both comprise a first interface material and a second interface material~~ more than one of said materials in a pre-determined proportions, wherein said first phase ~~composition~~ and said second phase ~~composition~~ are not identical.

95. (Currently Amended) The method according to claim 80, wherein at least one of said phases ~~phase~~ is a continuous phase.

96. (Currently Amended) The method according to claim 80, wherein at least one of said phases ~~phase~~ is a non-continuous phase.

97. (Currently Amended) The method according to claim 80, wherein the desired properties of said pseudo composite material are selected from the group consisting of ~~are~~ isotropic properties, un-isotropic anisotropic properties or a combination thereof.

98. (Currently Amended) The method according to claim ~~80~~ 97, wherein said desired properties are mechanical, thermo-mechanical, optical, acoustic, electrical or any combination thereof.

99. (Currently Amended) The method according to claim 80, wherein ~~the~~ mechanical strength of said ~~pseudo~~-composite material along one axis of said composite material is higher than ~~said~~ mechanical strength of said composite material along another axis of said composite material.

100. (Currently Amended) The method according to claim 80, wherein ~~[[the]]~~ elasticity of said ~~pseudo~~ composite material along one axis of said composite material is higher than ~~said~~ elasticity of said composite material along another axis of said composite material.

101. (Currently Amended) The method according to claim 80, further comprising ~~the step of producing one or more phases, pre-designing each phase comprising a multiplicity of construction layers of a three-dimensional object.~~

102. (Original) The method according to claim 80, for use in the preparation of a three-dimensional object.

103. (Currently Amended) The method according to claim 102, ~~further comprising the step of producing one or more phases, wherein each phase comprises comprising a multiplicity of construction layers.~~

104. (Currently Amended) The method according to claim ~~103~~ 102, further comprising ~~the step of:~~

producing a multiplicity of support layers for supporting said construction layers of said three-dimensional object.

105. (Currently Amended) The method according to claim 104, further comprising ~~the step of:~~

producing a multiplicity of release layers for releasing said support layers, wherein said release layers are positioned between said support layers and said construction layers.

106. (Currently Amended) A three-dimensional printing system ~~printer~~ capable of printing a ~~pseudo~~-multi-phase composite material, said printing system ~~printer~~ comprising:

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~~a controller to enable producing a first phase and a second phase, wherein said first phase and said second phase comprise an organic compound, thereby producing a pseudo composite material having a non-homogeneous three-dimensional structure to receive a pre-designed structure of said multi-phase composite material according to desired pre-defined properties of said composite material; and~~

two or more dispensers to dispense corresponding two or more materials based on instructions from said controller according to said pre-designed structure, wherein said materials form layers corresponding to said structure, each said layer comprising one or more phases of said multi-phase composite material, each said phase comprising one or more of said materials.

107. (Currently Amended) The printing system printer according to claim 106 further comprising;

a curing unit.

~~wherein said first phase is structurally different from said second phase.~~

108. (Currently Amended) The printing system printer according to claim 106 for use in the preparation of a three-dimensional object, ~~wherein said first phase is chemically different from said second phase.~~

109. - 111. (Cancelled)

112. (Currently Amended) The printing system printer according to claim 107 [[111]], wherein said curing unit ~~curable component is~~ uses electron beam ~~curable~~, electromagnetic radiation ~~curable~~, ~~thermo-curable~~ thermal radiation or any combination thereof.

113. - 124. (Cancelled)